

# Continental Drift



**Essential Standard 2.1: Explain how processes and forces affect the lithosphere**

**Objective 2.1.1: Explain how the rock cycle, plate tectonics, volcanoes, and earthquakes impact the lithosphere.**

# Puzzle Pieces

Early Cartographers noticed that the continents fit together like puzzle pieces



**Impossible**  
How could entire continents move?

# Alfred Wegener

The idea of Continental Drift was first proposed by Alfred Wegener in 1912



# Pangaea

Wegener proposed that about 300 - 200 million years ago, Earth's continent connected as a Super-Continent named Pangaea.

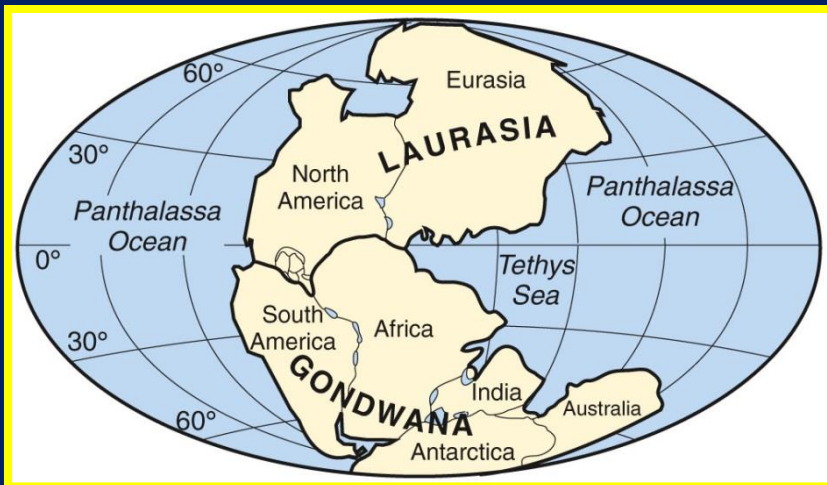


## Geologic History

Era	Period	Millions of years ago (mya)	Illustration
CENOZOIC	Quaternary	(1.8 mya-present)	Human, meteor
	Tertiary	(65-1.8 mya)	Monkey, dinosaur
MESOZOIC	Cretaceous	(146-65 mya)	Dinosaur, flower
	Jurassic	(200-146 mya)	Dinosaur, bird
	Triassic	(251-200 mya)	Insect, dinosaur
PALEOZOIC	Permian	(299-251 mya)	Planet Earth
	Carboniferous	(359-299 mya)	Insect
	Devonian	(416-359 mya)	Plant, trilobite
	Silurian	(444-416 mya)	Fish, spider
	Ordovician	(488-444 mya)	Mountain range
	Cambrian	(542-488 mya)	Trilobite
PRECAMBRIAN		(4570-542 mya)	Microorganisms

# Laurasia and Gondwanaland

Then, about 200 mya, Pangaea broke apart into Laurasia and Gondwana.

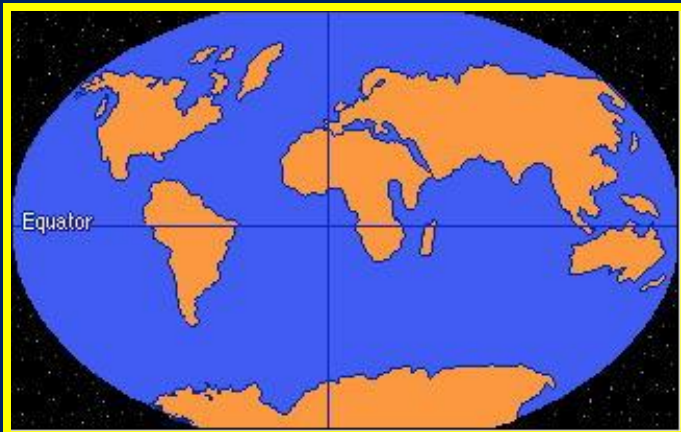


## Geologic History

Era	Period	Millions of years ago (mya)
CENOZOIC	Quaternary	(1.8 mya-present)
	Tertiary	(65-1.8 mya)
MESOZOIC	Cretaceous	(146-65 mya)
	Jurassic	(200-146 mya)
	Triassic	(251-200 mya)
PALEOZOIC	Permian	(299-251 mya)
	Carboniferous	(359-299 mya)
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	Silurian	(444-416 mya)
	Ordovician	(488-444 mya)
	Cambrian	(542-488 mya)
PRECAMBRIAN		(4570-542 mya)

# Continental Drift

About 55 million years ago the  
Continents drifted to  
current position



## Geologic History

Era	Period	Millions of years ago (mya)	Illustrations
CENOZOIC	Quaternary	(1.8 mya-present)	Human, meteor
	Tertiary	(65-1.8 mya)	Monkey, dinosaur
MESOZOIC	Cretaceous	(146-65 mya)	Dinosaur, flower, bird
	Jurassic	(200-146 mya)	Dinosaur, bird
	Triassic	(251-200 mya)	Insect, dinosaur
PALEOZOIC	Permian	(299-251 mya)	Planet Earth
	Carboniferous	(359-299 mya)	Insect
	Devonian	(416-359 mya)	Plant, trilobite
	Silurian	(444-416 mya)	Fish, spider
	Ordovician	(488-444 mya)	Mountain landscape
	Cambrian	(542-488 mya)	Trilobite
PRECAMBRIAN		(4570-542 mya)	Microorganisms

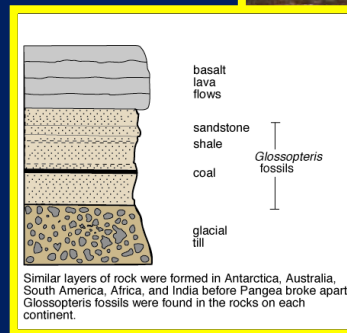
# Evidence

Wegener's first piece of evidence for Continental Drift was that the edges of the continents fit together like puzzle pieces.



# Evidence

Wegener also noted that similar rock formations on could be found opposite sides of the ocean.



Similar layers of rock were formed in Antarctica, Australia, South America, Africa, and India before Pangea broke apart. Glossopteris fossils were found in the rocks on each continent.

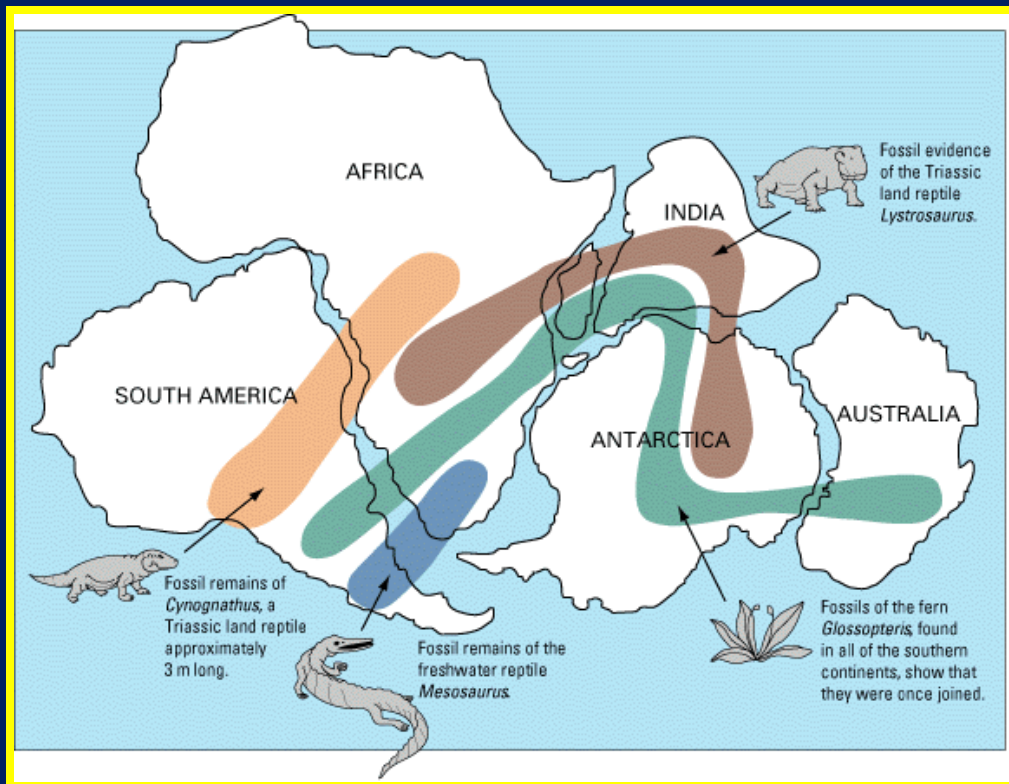


Wegener reasoned they must have formed as the same mountain chain that was later separated.



# Evidence

Wegener also noted that the presence of similar fossils on different continents also suggested that the continents must have once been joined.



These fossils were land dwelling animals and could not have swam across the oceans.

# Evidence

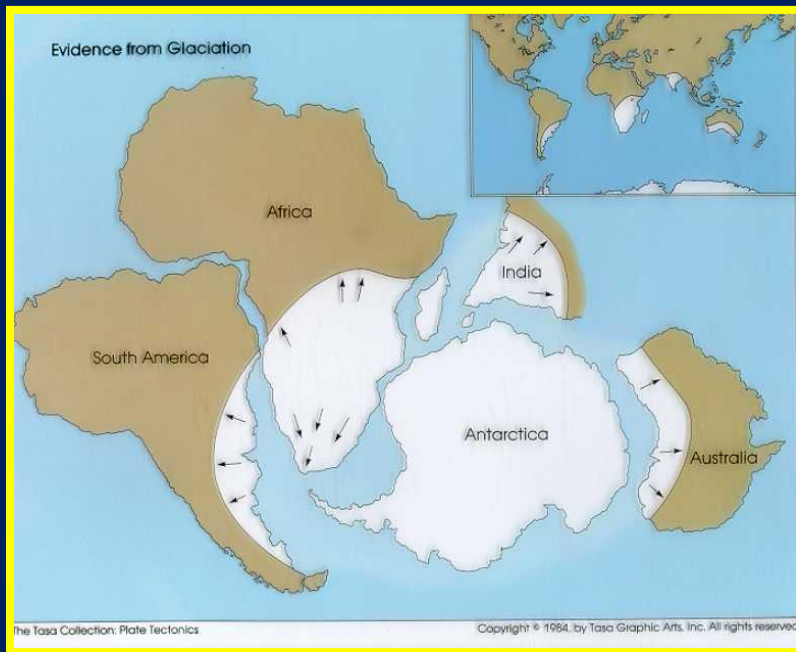
Wegener also found fossils of a fern type plant. called *Glossopteris*, all over former Gondwanaland.

Being that this area is too large to support only one climate, the continents that made up Gondwanaland must have been joined together at one time.



# Evidence

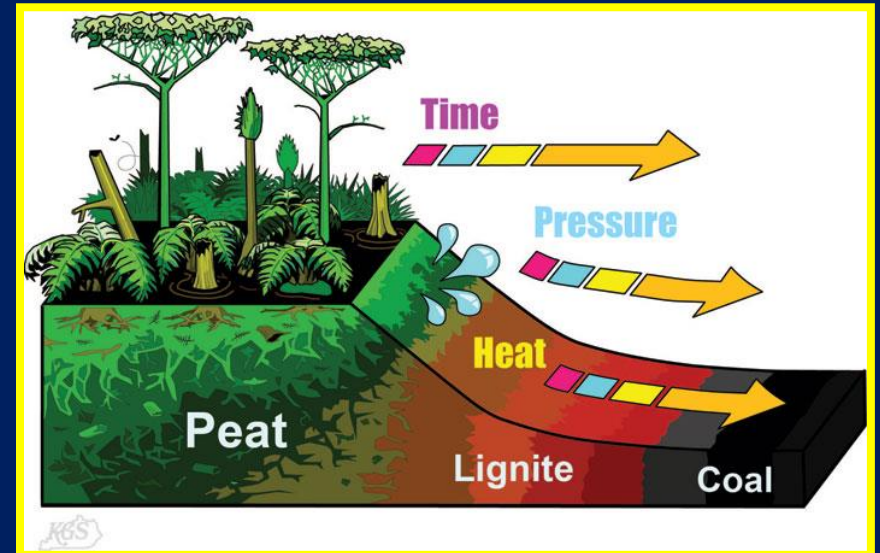
Wegener also found glacial deposits found in Africa, India, and Australia, areas known for their warm climates.



This suggested to Wegener that the continents must have been located closer to the south pole and later moved to their present location.

# Evidence

Wegener also found Coal deposits in Antarctica.



Being that coal is formed from ancient swamps in warm climates, he reasoned that Antarctica must have once been closer to the equator.

# Hypothesis Rejected

Even with all this evidence, Wegener could not explain what force could be large enough to move the continents, so his hypothesis was rejected by the scientific community..



Wegener, on the right, died on an expedition to Greenland in 1930.

# The End

